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1 RECORD OF ORAL HEARING
2 UNITED STATES PATENT AND TRADEMARK OFFICE
3

4
5 BEFORE THE BOARD OF PATENT APPEALS
6 AND INTERFERENCES

7 *Ex parte* MARKKU KESKINIVA, ET AL.
8

9 Appeal No. 2010-000890
10 Application No. 10/563,821
11 Technology Center 3700

12 Oral Hearing Held: November 10, 2011
13

14 Before KEN B. BARRETT, GAY A. SPAHN, and
15 MICHAEL C. ASTORINO, *Administrative Patent Judges*.

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1 The above-entitled matter came on for hearing on Thursday, November 10,
2 2011, commencing at 9:23 a.m., at the U.S. Patent and Trademark Office,
3 600 Dulany Street, Alexandria, Virginia, before Dawn A. Brown, Notary
4 Public.

5 PROCEEDINGS

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7 THE USHER: Calendar Number 32, Appeal Number 2010-000890.

8 Mr. Killian.

9 JUDGE BARRETT: Good morning, Mr. Killian. Before we begin, do you
10 have a card for the court reporter?

11 MR. KILLIAN: Yes, I do.

12 JUDGE BARRETT: And if you would, please, introduce your associate.

13 MR. KILLIAN: Absolutely. My name is Jeff Killian. I'm previously
14 associated with Drinker Biddle, now with Morgan Lewis. I'm arguing for the
15 Applicant today upon their request. With me is Mr. Christopher Bruenjes
16 from Drinker Biddle, a former colleague of mine.

17 JUDGE BARRETT: You may begin whenever you're ready.

18 MR. KILLIAN: Okay. Very good. Thank you.

19 Good morning, ladies and gentlemen. This Application is about an impact
20 device. These devices are used for various purposes but predominantly for
21 rock-drilling operations. And that is going to become a distinction, I think, in
22 the argument today. And it is also in the papers but maybe not as clearly as
23 we'll talk about today.

24 The primary reference is to Ludvigson, L-U-D-V-I-G-S-O-N. That reference
25 refers to what is called a pile driver. This Application, as I said, is to an
26 impact device, but particularly to a percussive device.

1 And if you've been in this area long enough, if I can bring your memory back
2 to the construction of the Wilson Bridge, you probably remember what a pile
3 driver sounds like. Incessant boom, boom, boom. Okay? Very predictable.
4 Very methodic.
5 Percussive devices operates completely different fashion. If you've ever been
6 involved or heard rock-drilling operations at construction sites where they're
7 boring holes for dynamite or something, it is a consistent duh, duh, duh, duh,
8 duh, duh, duh, duh, duh sound. Okay?
9 The mechanism that operates those two devices is the distinction between the
10 Ludvigson pile driver and the Applicants' claims to a pressure-driven
11 percussive device. So let's look a little bit more at that.
12 Going back to Ludvigson. There is in Ludvigson a device that uses a
13 fluid-dampening system. If I refer you to in Ludvigson figure 1, maybe it will
14 be of help here.
15 There is a pressurized fluid-dampening system and a pile driver in the
16 Ludvigson reference, and this is completely different from the pressure fluid
17 operated impacted device in the claims. Look at figure 1, we'll walk through a
18 cycle of what would happen in this device according to Ludvigson.
19 It has the following -- first of all, it has a -- it's a dampening device. And you
20 know this because right in the beginning of the abstract, he says that there is a
21 cushion being provided. He says a gas cushion impact cap. Okay? So it is
22 dampening.
23 During the operation, pressurized fluid goes into the chamber 12 and biases the
24 piston 13 in a forward position. This is before any contact occurs between the
25 pile driver and the pile that is being driven.
26

1 The hammer then is driven with the impact cap into the pile by some separate
2 means -- and he talks about attaching this type of device to a hammer -- and
3 that causes the stress pulse. That contact causes the stress pulse. There is no
4 additional fluid being provided to 12 during that operation. It is purely kinetic
5 energy causing that.

6 Now, when that impacts, there is obviously some movement backwards of 13
7 there, which is the piston. Ludvigson discusses that. But he also says very
8 clearly, again in the Abstract, that there is no appreciable change in that gas
9 pressure during the impact. Okay?

10 That pressure volume is there merely to maintain the drive of the kinetic
11 energy of that pile driver. It is just like when you swing a hammer. If you
12 don't hold that hammer hard enough and you just hit that nail, you drive the
13 nail a little bit, but the hammer bounces off the head of the nail.
14 If you hold that harder and swing through, the nail drives further and you get
15 less return from the hammerhead. It is the same principle of operation with the
16 pile driver.

17 So continuing on, he then -- the hammer withdraws and the piston area has
18 now bounced back. He actually talks about how there is this movement
19 upwards of the piston. And then they repressurize when there is no contact
20 with the pile being driven to bias that 13 element forward again for the next
21 drive. And that is the boom, boom, boom we all lived with two or three years
22 ago.

23 For the Court's use, I actually have an animation of Ludvigson that has been
24 provided to me by the Applicant. If I could come forward if you think that
25 would be helpful.

26 JUDGE BARRETT: I guess that would be fine. It is not very long, is it?

1 MR. KILLIAN: No, no, no. It is not. It is a -- like a stop-action GIF image
2 here. This one is not on a loop, so I just have to keep running this. Hold on a
3 second. I'm sorry. Hit the wrong one. Okay. Here.
4 So you can see what happens during this operation of this device. It moves
5 forward. It impacts. There is the cushioning. It is withdrawn.
6 What you don't see here is the upward movement of the piston that is
7 described in the operation. And then it is biased forward again for the next
8 operation. And I'll have an animation for the Applicants' thing, which will
9 hopefully be helpful.
10 So moving to the next feature. So we understand Ludvigson has a particular
11 mode of operation which we now think is different than ours. So again, what
12 we want to emphasize in Ludvigson is that there is always a substantially same
13 pressure behind the piston, and no pressure pulse of the fluid actually
14 generates the stress pulse. Because our claim is about generating the stress
15 pulse. And we made this argument in the Appeal Brief.
16 JUDGE BARRETT: So specifically, Counsel, what structure are we talking
17 about? What structural distinction?
18 MR. KILLIAN: We're -- the structural distinction is the arrangement of
19 feature that provide the operating fluid above the piston and is the source of
20 the -- we say in our claim we generate the stress pulse based on that
21 combination of and arrangement of features.
22 JUDGE BARRETT: Okay. So you're talking about the means for generating
23 a stress pulse in the tool by the pressure of a pressure fluid?
24 MR. KILLIAN: Yeah. Well, I think we say -- I think there are two parts of
25 claim that we talk about. One is right in the first stanza we say that it's a
26 pressure fluid operating impact base comprising, and then at the end of that

1 first paragraph we say means for generating a stress pulse in the tool by the
2 pressure of a pressure fluid.

3 It is not by anything else. It is not by the mechanical impacting. It is by
4 pressure of a pressure fluid.

5 We go on and we talk about how -- in the second stanza, how the tool -- that
6 the transmission piston is either directly or indirectly during the generation of
7 this stress pulse in contact with the tool. And then -- I'm sorry.

8 JUDGE BARRETT: Let's -- go ahead. If you have another limitation you
9 want to point out.

10 MR. KILLIAN: And then I'd say in the final portion there is -- starts at A --
11 I'm sorry. I marked mine up.

12 But it says the impact device comprises. And then if you get to the fourth line,
13 it talks about -- well, there is an energy-charging means. And then it says to
14 flow -- let me see. It says energy-charging means having a pressure higher
15 than pressure -- the pressure fluid present to flow to the working chamber
16 cause a sudden increase forcing the transmission piston in the direction
17 compressing the tool and generating a stress pulse in the tool.

18 JUDGE BARRETT: So that is I read that as functional language. So what
19 structure is that tied to?

20 MR. KILLIAN: That is tied to the -- for illustrative purposes only I'll refer to
21 figure 1 of our Application. But that refers to the energy-charging space for
22 the control, being 7, the piping or transmission connections between the
23 operative -- transmission between those to the working chamber 8.
24 And then, of course, we positively recite in the claim the transmission piston 9,
25 which contacts the tool 3 during that operation.

26 JUDGE BARRETT: Okay. So in terms of the claim, what specific claim

1 language, then, are we looking at for the structure?

2 MR. KILLIAN: The structure for which? Just so I'm clear what you're asking.

3 JUDGE BARRETT: All right. Let me take a step back and make sure I
4 understand. So you're pointing to the language about the -- moving the higher
5 pressure fluid from one place to the next.

6 MR. KILLIAN: Yes.

7 JUDGE BARRETT: What specific structure in the claim are we then looking
8 at to do that function?

9 MR. KILLIAN: Okay. Well, the fluid then would be coming from the
10 energy-charging space 4, through the control 7 to the working chamber 8.

11 JUDGE BARRETT: Okay.

12 MR. KILLIAN: And in order to get the pressure higher, I believe you would
13 need the pump 5, you know, in order to pressurize the system.

14 JUDGE BARRETT: Okay. All right. Now, back to your second point about
15 the -- when the contact happens.

16 MR. KILLIAN: Yes.

17 JUDGE BARRETT: So we're talking about the stress pulse happening when
18 there is contact between the piston and the tool. I understand the Examiner to
19 say the same thing, that the stress pulse is generated upon that contact.

20 MR. KILLIAN: Well, I think he says it is generated by that contact.

21 JUDGE BARRETT: Okay.

22 MR. KILLIAN: And I think what our claim says is that they are in contact but
23 the pulse is generated by the fluid pressure.

24 JUDGE BARRETT: Okay.

25 MR. KILLIAN: And there is a distinction there. And I think it says -- again,

26

1 the first point I pointed out to you in the first paragraph, it says that the stress
2 pulse is generated by the pressure of the pressure fluid. It is not generated
3 simply by the kinetic energy that is in the Ludvigson pile driver.

4 JUDGE BARRETT: Okay. I understand. Thank you.

5 MR. KILLIAN: Okay. Well, we covered some of what I was going to say
6 here about generating a stress pulse. I can demonstrate the device same as
7 with the last one, just visually, and I have a couple of remarks on the pulse.
8 Like having a little something you can see when I come in. So this one is on a
9 loop. So you can see the stress pulse is animated below, the operation of the
10 device above.

11 You can see that the piston and the tool are in direct contact in this instance.
12 The pressure is provided above. And you see that the stress pulse is
13 coordinated to the application and removal of that stress pulse. I think there
14 are additional claims that say that the stress pulse ends when the pressure is
15 removed.

16 Again, we're limiting ourselves to a stress pulse generated by this fluid
17 pressure, not other types of stress pulses.

18 And the reason this is important is if you go back to the sounds that -- pile
19 driver, very methodic, percussive device, very rapid, very continuous, you
20 simply get better, more rapid movement moving fluid than you do all the
21 mechanical features that would have gone into prior art devices. Just faster,
22 more efficient, better transmission of energy.

23 So I would say, again, that the Examiner's position regarding the stress pulse
24 being by the contact in Ludvigson is fatal to his anticipation argument.

25 Because the claim clearly says that the stress pulse is generated by the
26

1 pressure. And, therefore, that reference fails to invalidate the claim. We think
2 we distinguish over Ludvigson.

3 None of the means for moving the hammer towards the pile disclosed in
4 Ludvigson is caused by the pressure. The movement is generally the device
5 containing impact cap. That is why they bias the cap -- the piston forward in
6 the cap so that that is the contact area.

7 He has a sensor in the cap because that is where he uses feedback to allow the
8 pressure to be essentially unchanged as he says in his abstract. It is merely a
9 cushioning device. And, therefore, there is no means for generating a stress
10 pulse in the tube by the pressure or pressure fluid.

11 I pointed out the claim -- features in claim 1 for you. If you go to claim 19,
12 which is the method of -- regarding this, I think in the middle of the claim you
13 can see, again, that the -- that it says that the -- as a result of a sudden increase
14 in the pressure in the working chamber produces a force pushing the piston in
15 the direction of the tool, compressing the tool in longitudinal direction and
16 generating a stress pulse in the tool. So again, it is the pressure fluid
17 generating a stress pulse in the tool in this method claim of 19.

18 With that, I'd like -- I'll rest. I think that those are the distinctions and the
19 claim should be allowable over the Ludvigson reference.

20 Are there any questions from the Board?

21 JUDGE BARRETT: I think we understand your arguments and thank you.

22 MR. KILLIAN: Thank you very much. Have a good day.

23 JUDGE BARRETT: You too.

24 (Whereupon, the proceedings at 9:39 a.m. were concluded.)

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